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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/648,657      | 08/25/2000  | Yoshimasa Chikama    | 55058(820)          | 5508             |

7590 10/04/2002

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[REDACTED] EXAMINER

ALANKO, ANITA KAREN

[REDACTED] ART UNIT

[REDACTED] PAPER NUMBER

1765

DATE MAILED: 10/04/2002

9

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                 |                |
|------------------------------|-----------------|----------------|
| <b>Office Action Summary</b> | Application No. | Applicant(s)   |
|                              | 09/648,657      | CHIKAMA ET AL. |
|                              | Examiner        | Art Unit       |
|                              | Anita K Alanko  | 1765           |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
 THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on 13 August 2002.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-14 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved by the Examiner.  
 If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.
- 4) Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_\_

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***Information Disclosure Statement***

The information disclosure statement filed 8/13/02 fails to comply with 37 CFR 1.98(a)(3) because it does not include a concise explanation of the relevance, as it is presently understood by the individual designated in 37 CFR 1.56(c) most knowledgeable about the content of the information, of each patent listed that is not in the English language. It has been placed in the application file, but the information referred to therein has not been considered.

The search report and Korean office action are missing from the IDS submission.

***Claim Rejections - 35 USC § 112***

Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, line 6, the term "low" is a relative term that renders the metes and bounds of the claim unclear.

Claims 2-14 fail to cure the indefiniteness of their base claim, and are therefore also rejected.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

***Claims 1-4, 6-13 rejected under 35 U.S.C. 103(a) as being unpatentable over Joshi in view of JP 10-245,444.***

Joshi discloses a method comprising forming a polyimide resin on a substrate, patterning it (by RIE) and then forming a metal on the polyimide resin (col.2, lines 10-12).

Joshi does not disclose how to form the metal film. JP 10-245,444 teaches a useful method for forming a metal film on polyimide with excellent adhesion force (paragraph [0004]), including: forming a polyimide resin film, followed by modifying the surface with KOH, reducing metal ions and plating (see Example, paragraphs [0016]-[0018] of translation).

It would have been obvious to one with ordinary skill in the art to form the metal on the polyimide film in the method of Joshi using the method of JP 10-245,444 of modifying the polyimide surface and then plating because JP 10-245,444 teaches that it is useful for forming a film with excellent adhesion force.

***Claims 1-4, 6-14 rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Joshi, JP 10-245,444 and Larsson et al (U.S. Patent No. 6,303,278 B1).***

The discussion of modified Joshi from above is repeated here.

As to claim 14, JP 10-245,444 discloses to use a solution to reduce the nickel metal ions to nickel. Larsson teaches that an equivalent alternative technique for using a solution for the reduction is a photochemical technique (col.5, lines 34-41). Larsson teaches that ultraviolet light is useful for the reduction process (col.7, line 35). It would have been obvious to use ultraviolet light to reduce the metal ions to metal in the method of Joshi modified by JP 10-245,444 because

Larsson teaches that this is a useful, functionally equivalent technique compared to solution processing.

*Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-245,444 in view of Iwasaki et al (U.S. Patent No. 5,323,534).*

The discussion of modified Joshi from above is repeated here.

As to claim 5, JP 10-245,444 does not teach add catalyst to the resin. Iwasaki teaches that adding a catalyst to resins is conventional in order to prepare for subsequent plating (col.11, lines 65-65). It would have been obvious to one with ordinary skill in the art to add the catalyst to the resin in the method of Joshi modified by JP 10-245,444 in order to save time and money and decrease contamination by not requiring multiple steps for forming catalyst films, and because it is a conventional technique in plating as taught by Iwasaki.

#### *Response to Amendment*

The 102 rejection over JP 10-245,444 is withdrawn.

Claims 1-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-4, 6-13 rejected under 35 U.S.C. 103(a) as being unpatentable over Joshi in view of JP 10-245,444.

Claims 1-4, 6-14 rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Joshi, JP 10-245,444 and Larsson et al (U.S. Patent No. 6,303,278 B1).

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Claims 1-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-245,444 in view of Iwasaki et al (U.S. Patent No. 5,323,534).

### *Response to Arguments*

Applicant's arguments filed 8/13/02 have been fully considered but they are not persuasive. The 112 rejection has not been withdrawn. Applicant argues that "low" is not a relative term because the specification recites specific metal layers. However, the specification also recites that the layers may comprise a multilayer, and the resistivity of the multilayer is not defined because the composition of the multilayer is not defined. The term would be definite if the resistivity was limited to those of Cu, Ni or Au.

Examiner acknowledges that JP 10-245,444 does not disclose to pattern the polyimide layer. Joshi is now applied to disclose that patterning of polyimide layers prior to metal deposition is conventional.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anita K Alanko whose telephone number is 703-305-7708. The examiner can normally be reached on Monday-Friday, 10:00 am-4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin Utech can be reached on 703-308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9057 for regular communications and 703-872-9311 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

*Anita K. Alanko*

Anita K Alanko  
Primary Examiner  
Art Unit 1765

AKA  
September 28, 2002